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ABSTRACT

This first year report of a life span analysis of rural Kansas children's mental and social development focuses on the children's cognitive development and the effect of family attitudes and child caring patterns on the children's development. The subjects, 62 rural children aged 3, 6, and 9 years, are to be interviewed annually. Initial analysis of data from standardized assessment tests at the end of the first year indicated a varying pattern of relationships between the three age cohorts. Socioeconomic status was an important correlate of the children's cognitive development at 3, 6, and 9 years. The home environment was a strong factor for the 3-year-olds. Parental variables including the mother's anomie (feeling of alienation) and her level of community involvement, as well as lack of paternal satisfaction, were important correlates of the 9-year-olds' cognitive development. The pattern of the 6-year-olds is less clear. (Author/CM)

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A Life Span Analysis of Rural Kansas Children's Mental and Social Development

First Year Report[1]

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TITLE: A Life Span Analysis of Rural Kansas Children's Mental and Social Development: First Year Report

PURPOSE: Eight midwestern states* have developed a research project to identify the salient factors in the rural child's mental and social development. While there have been analyses of the interaction and outcome of selected variables influencing the mental and social development of urban and "disadvantaged" children, research on the rural farm child tended to be overlooked. The objectives of this regional research project are:

A. To investigate the development of cognitive abilities and social competence in rural children.

B. To describe family attitudes, demographic characteristics and child caring patterns of rural families.

C. To analyze the influence of family characteristics on the development of rural children, and

D. To provide information to Extension personnel and other educators to assist them in developing programs and services which will improve the quality of rural family life.

METHODOLOGY: The overall design is a longitudinal/cross sectional procedure which allows the analysis of the relationships among the variables over time. Approximately ten male and ten female children initially 3, 6, and 9 years old are to be interviewed annually, providing an age range from 3 to 11 years in a three-year longitudinal design within each age cohort. The overall design encompasses the development

*Illinois, Indiana, Iowa, Kansas, Michigan, Missouri, Nebraska, and Wisconsin

of needed instruments and the utilization of established measures.

INSTRUMENTS: The Kansas Home Interview Scale includes indices of demographic and family characteristics and child caring patterns. Maternal and paternal education combined with gross or net income provide indices of the family's socioeconomic status. The Kansas Home Interview Scales which are administered to the children's mother also include an Anomia scale (Srole, 1956), maternal involvement, paternal involvement, patent-child activities, and the satisfaction scales. The Child Care Index pertains to the preschool child care history of the children. The Environmental Assessment measures the educational quality of the child's home and is based upon Bradley and Caldwell (1976). Further information about the child caring patterns is obtained through the Iowa Parent Behavior Scale questionnaire (under development) which is completed by both the child's parents.

The children's cognitive abilities are assessed with standardized measures including the Peabody Picture Vocabulary Test (PPVT), 3-year cohort only, and the Vocabulary, Information, Picture Completion, and Block Design design subtests of the Wechsler Intelligence Scale for Children -- Revised (WISC-R). In addition, cognitive abilities are futher assessed through the administration of the Nebraska-Wisconsin Cognitive Assessment Battery currently under development by the regional project based upon a Piagetian model. The Iowa Social Competency Scales (under development) are questionnaires completed by the parents as an index of the child's social development.

SAMPLE: The sample consists of 62 target children and their parents. All are intact two-parent families who derive some income from their farm of at least ten acres and who have lived on a farm for at least five

years prior to the study. The target children were 3-0 through 3-6, 6-0 through 6-6, and 9-0 through 9-6 for the initial testing. Children with obvious handicaps were excluded and only those families who signed informed consent documents participated in the three year study. Families came from twelve counties randomly distributed throughout Kansas.

First Year Sample

(Number of Children)

SEX	3-year	6-year	9-year	Total
Male	9	10	9	28
Female	10	13	11	34
Total	19	23	20	62

INITIAL RESULTS: The results for the first year's data collection on available instruments are presented in Table 1. The children demonstrated

Insert Table 1 about here

above average performance on the standardized measures of cognitive development with a mean PPVT score for the 3-year cohort of 110 and mean WISC-R subtest scaled scores ranging from 11.2 through 14.1. Scores on the Nebraska-Wisconsin Cognitive Assessment Battery are not available at this time. The Kansas Home Interview Scale data shows the husband's average age to be 37 years and the wife's to be 34. The sample appears to be well educated with a mean of 13.6 years of

Table 1

FIRST YEAR MEAN RESULTS

Target Children

Variable	3-year	6-year	9-year
Age (years)	3.3	6.3	6.3
Peabody Picture Vocabulary Test (I.Q.)	110.3**	--	--
Weschsler Intelligence Scale for Children --Revised - I.Q. Estimate	--	109.13**	113.0**
Vocabulary (scaled score)	--	11.2	12.1**
Information (scaled score)	--	11.8**	12.7**
Picture Completion (scaled score)	--	13.0**	14.1**
Block Design (scaled score)	--	11.3*	11.5*
Demographic Characteristics			
Mother's Age (years)	32.2	33.7	36.4
Father's Age (years)	34.6	35.8	39.6
Mother's Education (years)	13.3	13.3	13.1
Father's Education (years)	12.9	14.3	13.5
Net Income (category)	3.5	3.6	3.3
Gross Income (category)	4.9	4.1	4.4
SESN (socioeconomic status, net est.)	47.3	49.0	47.0
SESG (socioecomonic status, gross est.)	46.1	44.3	44.9

*significantly greater than norm, $p < .05$

**significantly greater than norm, $p < .01$

Table 1 (continued)

FIRST YEAR REPORT

Family Attitudes/Characteristics

Variable	3-year	6-year	9-year
ANOMIA	11.3	10.7	11.1
Maternal Satisfaction	24.0	23.4	24.9
Paternal Satisfaction (wife's report)	24.8	23.8	25.7
Maternal Involvement (activities/year)	224.1	239.6	242.2
Paternal Involvement (wife's report)	229.9	251.8	252.2
Parent-Child Involvement	215.4	165.4	183.5
Family Size (number of people)	5.6	5.5	6.1
Child Caring Patterns			
Separation from parents (weeks)	7.2	9.0	15.6
ENVIRONMENTAL ASSESSMENT INDEX	47.8	49.9	50.1

formal education for the fathers and 13.2 years for the mothers. The average reported net income falls in the $10,000-$14,000 income category with an average reported gross income in the $25,000-$49,000 income category. The socioeconomic status index (SESN) is based on the net income and the educational attainments of both parents. Another socio-economic status index is based upon gross income (SESG). These computations place approximately equal weight on income and educational variations. The Anomia scale in which the mothers were asked if they agreed or disagreed with the eight statements ranges from 8 to 16 with a high score indicating alienation. The maternal interview also included four rating scales pertaining to the wife's and husband's satisfaction with identical items yielding similar results. The topics covered by the seven point scales (7=high) and mean scores were occupation (6.5), paternal satisfaction (6.4), family life (6.6), and income (5.3). During the home interviews the mothers were asked how often they participated in various activities during the past year. They were also asked to estimate the frequency their husbands participated in various home and community activities. In addition, they were asked about the number of times they engaged in joint activities with the target child. The drop in reported joint activities with the child from the 3-year cohort to the 6- and 9-year cohorts is not significant. The family size was calculated by adding the reported number of adults and children in the households. The typical household in this restricted study appears to be two adults (husband and wife) and two-three children ranging from 3 to 14 children in the Kansas sample. The child care portion of the Kansas Home Interview Scales (KHIS) included a question about the number of weeks of complete parent-child separation

during the child's preschool (under age 6) lifetime. The jump from the 3- and 6-year cohort averages of 7.2 and 9.0 to 15.6 weeks bears further investigation to determine if it is valid or due to a misinterpretation of the question. The last section of the KHIS was the Environmental Assessment Index which consisted of 44 items. Some items were based upon observation of the homes and some were based upon the mother's responses. All were checked either "yes" or "no" and the Index represents the number of the "yes" responses. Analysis of the Iowa Social Competency Scale and the Iowa Parent Behavior Inventory are not available at this time pending further analysis and development.

INITIAL FIRST YEAR ANALYSIS: The first year data was analyzed utilizing multiple linear regression to determine the relationship between the antecedent variables and the children's cognitive development. For the three-year-old cohort the dependent variable was Peabody Picture Vocabulary I.Q. Test. The variables contributing to the multiple regression equation and accounting for 88% of the variance in PPVT I.Q. were socioeconomic status (net) and environmental assessment as indicated below:

Multiple Regression Results - 3-year cohort

Variable	Multiple Correlation*	F*
SESN	.73	16.1
Environmental Assessment	.94	48.2

*in order of entry, N=15

When the 6- and 9-year cohorts were combined for a multiple regression analysis of the correlates of the estimated WISC-R I.Q. the multiple regression did not exceed .35 with three variables entered. With the separate cohort analysis the following results were obtained:

Multiple Regression Results - 6-year cohort

Variable	Multiple Correlation*	F*
Separation (child care index)	.46	5.3
SESN	.56	4.4
Paternal Community Involvement	.71	5.9

*in order of entry, N=2

Multiple Regression Results - 9-year cohort

Variable	Multiple Correlation*	F*
Anomia	.62	8.2
SESN	.78	9.5
Paternal Satisfaction	.82	7.8
Maternal Community Involvement	.84	6.0

*in order of entry, N=14

This analysis clearly indicates a varying pattern of relationships among the variables at different ages (or in different age samples). SESN, socioeconomic status based upon net income, is clearly involved at the three cross-sectional ages. The immediate environment of the child as assessed by the environmental assessment is a clear second correlate for the three-year cohort. Separation, if valid, is an

important correlate for the six-year cohort. The father's community involvement is a supporting correlate at this age. The nine-year cohort shows a somewhat different pattern with Anomia being the strongest correlate with WISC-R estimated I.Q., then SESN, followed by Paternal Satisfaction and Maternal Community Involvement.

Correlations between I.Q. estimates and antecedent variables indicated by the multiple regression analysis to be relevant are given in Table 2. These correlations further demonstrate the alterations in the relationships between the significant variables for the three different age cohorts.

Insert Table 2 here

DISCUSSION: These initial results indicate that at least this sample of rural children are functioning at above average levels on the measures of cognitive development utilized in this study. The three-year cohorts attained a mean PPVT I.Q. of 110 and the six- and nine-year cohorts attained WISC-R scaled scores on selected subtests between 11.2 and 14.1.

The most important findings are the relationships between family characteristics and the children's mental development. Different patterns were found for each age cohort in the sample with socioeconomic status appearing at each age. The three-year cohort also has the Environmental Assessment as the secondary factor carrying enough weight to bring the multiple correlation to .94 against PPVT I.Q. The strength of this result indicates a potential for greater understanding of the pattern of interaction through the analysis of the linkage between SES and the child's cognitive development. Some of the

Table 2

Pearson Correlation Coefficients Between
Cognitive Development and Selected Variables

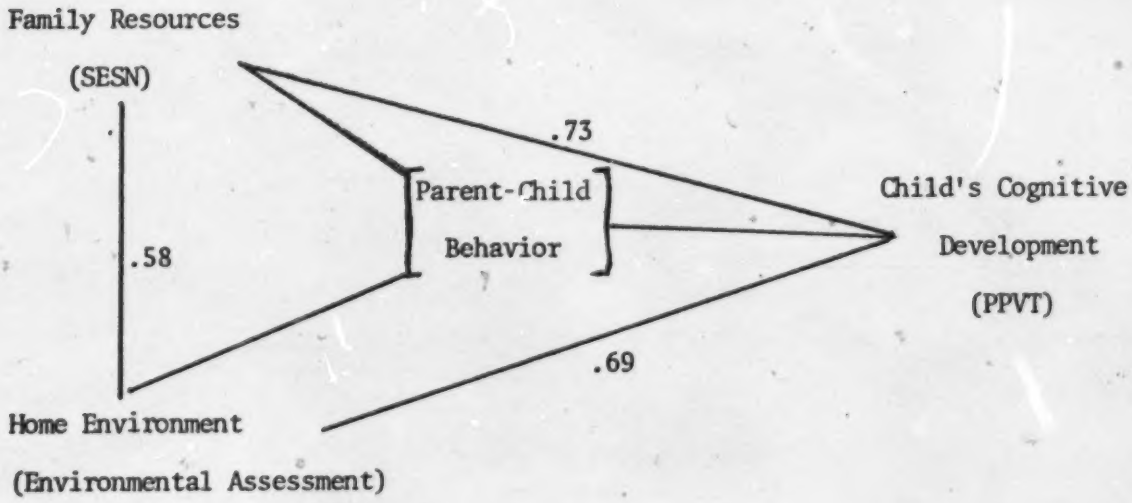
Selected Varibles	Cohort 3-year	6-year	9-year
(I.Q. estimate source)	(PPVT)	(4 WISC-R subtests)	
Socioeconomic Status Index (net)	.73**	-.35	.61**
Anomia Scale total score	-.27	.00	-.62**
Separation	.41	-.46*	.17
Environmental Assessment	.69**	-.16	.41
Paternal Education (years)	.14	-.16	.45*
Maternal Education (years)	.32	-.03	.45*
Net Income (category)	.74**	-.35	.49*
Maternal Community Involvement	.29	-.09	.30
Paternal Community Involvement	.14	.09	.17
Paternal Satisfaction	.42	.24	-.24
TV (scheduled presence vs absence)	.13	-.39	.46*
Books (10 or more visible)	.28	.05	.51*
Safe Play Area	.56*	--	--
Mother Talks with Child During Interview	.09	.09	.52*
Number Learning (opportunities)	.61**	--	--
Trips of a Week or More	.61**	-.20	.22

*significant, $p < .05$

**significant, $p < .01$

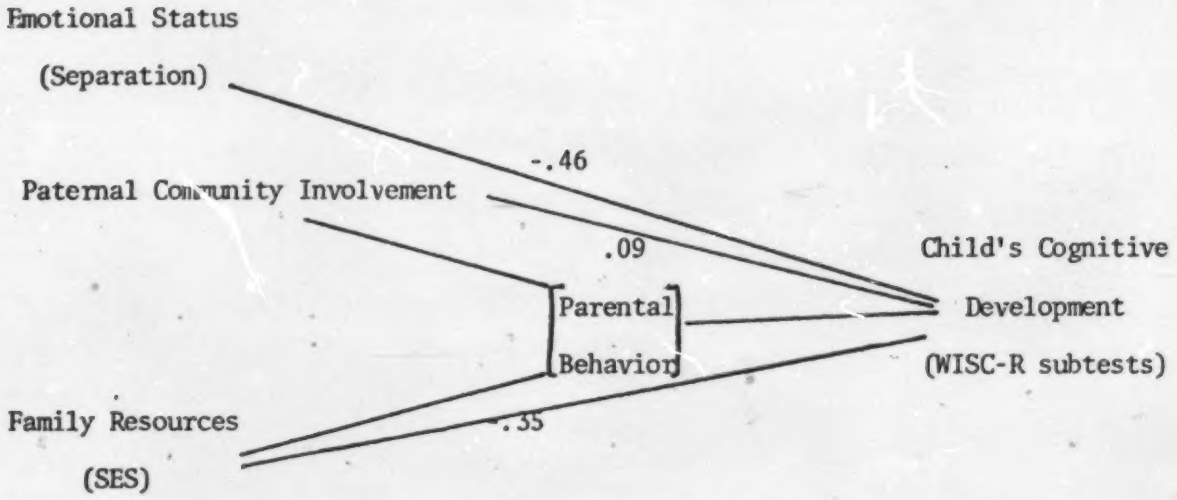
linkage is shown by the environmental assessment correlation of .69 and further analysis of the parental behavior reports should clarify the relationship as described in the diagram below:

Three-Year-Olds Pattern of Relationships



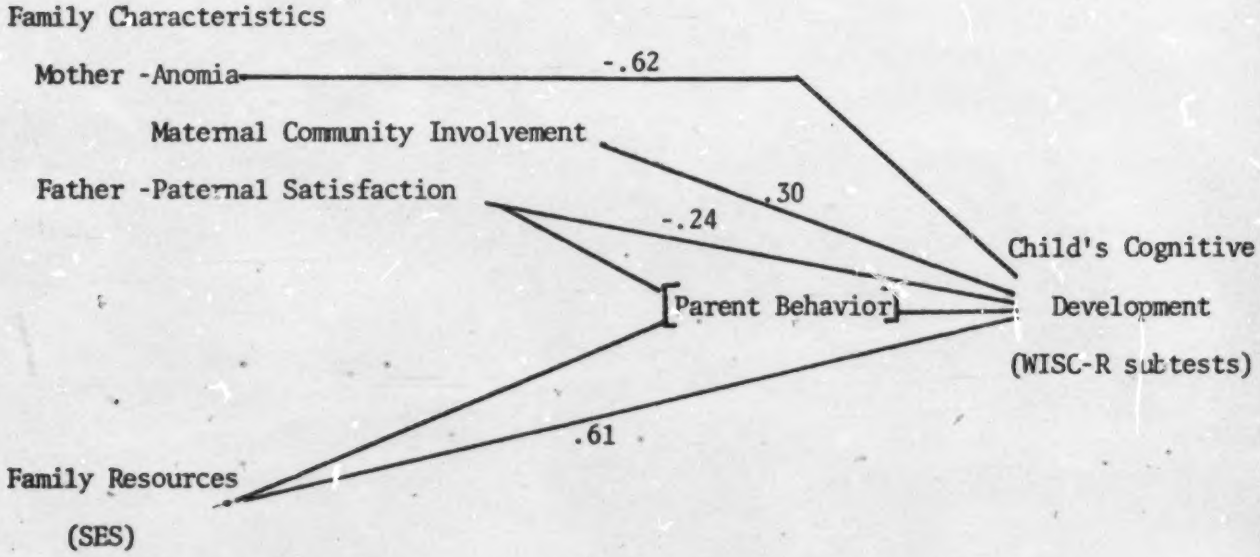
The pattern of relationships for the six-year cohort varies from that of the three-year cohort in that the major factors are Separation and Paternal Community Involvement in addition to SES. These factors suggest a different relationship among the variables with separation possibly indexing emotional distance from his primary family or some artifact in the separation item. The Paternal Community Involvement supports the concept of wider contracts as being important to the cognitive development of the 6-year-old child. The tentative pattern of relationships at this age is expressed below:

Six-Year Old's Pattern of Relationships



The results for the nine-year-old cohort present a third pattern of relationships with an even broader representation of family characteristics and community involvement having impact on the child's cognitive development. Two of the factors are maternal items including the Anomia scale and the Maternal Community Involvement scale. The Anomia scale is a measure of the mother's feelings of alienation and which is negatively related to the child's WISC-R score estimate. Paternal Satisfaction was positively related to WISC-R I.Q. estimate. These suggest the pattern of relationships for the nine-year-old cohort diagrammed below:

Nine-Year-Old's Pattern of Relationships



SUMMARY: Initial analysis of data on 62 rural children and their families suggests a varying pattern of relationships between the three age cohorts. SES was an important correlate of the children's cognitive development at 3, 6, and 9 years, but the other factors varied for the three age cohorts. The home environment was a strong factor for the 3-year-olds. Parental variables including the mother's feelings of Anomia and her level of community involvement as well as lack of paternal satisfaction were important correlates of the 9-year-old cohort's cognitive development. The pattern of the six-year-olds is less clear. These results suggest the potential and need to learn more about the important variables contributing to the cognitive development of rural children.

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